

Lesson Plan for UO Science and More Work shop

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This inquiry will take about a month to complete from start to finish. It includes many supplies and can take a few hours to prep for but the excitement and knowledge the kids gain is well worth it.

Science Inquiry – Life Science

Grades 1-5

Standards met: Inquiry based, cycles,

Math graphing, mean, charting

Writing : Expository writing with step by step instructions

****A worksheet is available that allows students to write down all their work and steps each phase out of the inquiry process for them. It is 3 pages and the teacher must include graph paper for the charts and graphs. All work can be shown on this for the upper grades. (I have designed this or the teacher can)**

Day 1-2 This inquiry will need a day or two with exploring seeds and how seeds grow (**expository set**). I give kids a chance to explore seeds, where they grow, conditions they grow in etc. I have our high school Ag. Class come down and show kids what they do in their greenhouse and how they start seeds. Some other ideas are starting seeds in small necklace baggies with wet cotton balls, going outside and looking for new emerging plants, watching videos, or let kids explore started seeds with magnifying glasses and drawing pictures. You want the kids to begin learning about seeds, growth conditions and asking questions relating to emerging seeds.

Day 3 – Have kids ask questions that are directly related to seed emergence. You can guide this by asking kids what they learned about seeds (hopefully they will tell you seeds need things like sun, warm temperatures, soil and water to begin growing). These are all perfect variables for a seed emergence experiment.

Make a list for the class that would be suitable questions for an inquiry. Examples include:

1. Will different soils effect seed emergence?
2. Will the amount of direct sun light effect seed emergence?
3. Will the amount of moisture effect seed emergence?
4. Will the age of seeds effect seed emergence?
5. Will temperature effect seed emergence?
6. Will pollution effect seed emergence?

These are all questions that lean toward an effective inquiry about seed emergence.

Day 4 – Kids choose their question and then make a hypothesis.

Design the experiment using three steps:

1. A list of supplies needed for the experiment
2. A picture drawing to label what the experiment would look like
3. Step by step instructions of how to set up the experiment.
 - Note: 1st and 2nd graders may want to do a class flip chart with all the writing and choose one class question instead of individual questions. They can do a modified version of an inquiry with simple sentences, pictures and graphs. This reduces the writing process for the younger grades. I have found after exposing kids from grades 3-5 and up to the inquiry process they can handle an individual or paired inquiry and handle the writing involved. It may take a couple days to complete the process however.
 - I have found that beans, peas, cucumbers and larger seeds work well for this age level. You should put 5-6 seeds in each pot when possible.
 - Supplies that you may need usually include:
 - a. several types of soil (clay, sand, gravelly)
 - b. potting soil
 - c. pots
 - d. spray bottles
 - e. seeds
 - f. incubator and fridge
 - g. graph paper
 - h. masking tape and permanent markers for labeling
 - i. large trays to hold the pots
 - j. misc. supplies depending on the experiment

Day 5-6 – Students set up their experiments using three – four pots for each experiment. Having a couple volunteers is helpful here with the young kids.

Day 7 - Make a chart to record data or have a form chart and the kids can fill them in with dates, quantities and notes.

Day 8 –18ish The experiment should run for 10-14 days. The kids come in to water daily (I find spray bottles work well for this because it contains spills and controls the amount of water to precise amounts with younger kids.) They record their data (new emerged plants). When a few kids have all the seeds emerged then the experiment is over. I find if you plant seeds late in a week, by the following week seeds will begin to emerge while the kids are in school.

Note: The teacher will need to come in at least once during the weekend to water experiments.

During the time the experiment runs you can have direct instruction about plants such as the plant cycle, parts of plants and their functions.

Day 20 – 21 Students do an analyze and conclude with a graph to chart their results. The kids must state whether their hypothesis were correct or in-correct, support with the numbers from their experiment (plants emerged and when). You can extend this to tri-folds or displays where they can display their question, hypothesis, designs, and their results. We have even had “Science Nights” to show off their work and kids get to take their experiments home afterwards.